REMARKS/DISCUSSION OF ISSUES

Claims 1, 3, 5 through 11, 13, and 14 are pending in this application.

Rejections under 35 USC § 103

Claims 1, 3, 5 through 11, 13, and 14 were rejected under 35 USC 103 (a) as being unpatentable over Tavor, US # 2001/0032077A1 in view of Hyman et al., US 2004/0138950A1. The rejections of the claims are respectfully traversed.

Response to Arguments

To establish a prima facie case of obviousness, three basic criteria must be met. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (MPEP 2143).

The applicants will demonstrate that there is no suggestion or motivation to combine or modify the references cited by the examiner, that there is no reasonable expectation of success of such combination and that in fact the combination is not possible, and finally that the combination of references does not result in the claimed invention.

Claims 1, 3, 13-14

The Tavor reference

In making the rejection, the examiner stated that:

"As per claims 1, 3 and 13-14, Tavor teaches 'developing feature text snippets for each feature, the snippets being phrases to be used when describing ... product features' (see abstract) 'dynamically generated fluent text that is used to convey product analyses...' (see page 4, paragraphs [0051-0054]) 'deveoping user profile text snippets ... generic phrases ...' (see page 4, paragraphs [0049]-[0052])."

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The Applicants disagree with this and have argued against this reading of the Tavor reference in an appeal brief, dated November 2004, and therefore respectfully suggest that reopening the prosecution with a new ground of rejection indicates that this reading of Tavor reference has been overcome. The applicants however reiterate the arguments against this reading of the Tavor reference as follows.

The Tavor reference is a program which uses natural language to directly compare two products which are selected from a group of products. Standard texts and relative statements are combined into sentences which compare selected products in a form such as, *"bigger than..."* or *"rather sweet"*, or *"a bit sweeter than..."* (Paragraph [21]). The Tavor specification is strictly described in terms of an algorithm to return a textual **comparison between specified products** based on a relation between the products. Although Tavor's generated descriptions use phrases that are keyed to particular product features, it does not take the user's preferences or requirements into account when deciding which features are most important to talk about, or how to combine feature descriptions with generic phrases (e.g. *"but"*, *"although"*) in order to create a recommendation that is personalized for the user. Tavor also does not generate any text related to user profiles, i.e. combinations of features that are important for specific purposes or types of users (e.g. *"...which is important if you just want to take vaction snapshots"*).There is nothing in *"cmp_data(Topic, Value, ProductName)"* which has any relation to specific users or their preferences or profiles.

The paragraphs cited by the Examiner in Tavor (Paragraphs [49] – [54]) as supporting his contention that Tavor teaches feature text snippets, user profile text snippets, and dynamically generated fluent text recommendations, do not describe or suggest the development, use or existence of user profile text snippets, as well as dynamically generated fluent text that is used to convey the results of product analyses which are claimed by the Applicants. Paragraph [49] in Tavor just describes replacing variables and constructing strings in the abstract. Paragraph [50] indicates that the data passed to the routine "Update_Compare_Text" is a string processed by the routine described in the last paragraph, a list of products, and a string representing the type of information in the previous string ("similar products", "additional info for products", etc.). Paragraph [51] describes how strings are strung together to form a unified sentence (i.e. if the string *"p1 is bigger than p2"* is added to an existing string *"p1 and p2 are big"*, the result is *"Although both p1 and p2 are big, p1 is bigger than p2"*). Paragraph [52] names the main procedure of the program, and indicates that it calls the other processes described earlier. Paragraph [53] states that for the comparison technique proposed by Tavor, certain data fragments will not appear in the output as a function of relational compare vs. the standard comparison technique. Finally, Paragraph [54] describes the assembly of the textual output of the program. It uses similar product information and the topic-value pairs to prepare a textual comparison between specified products based on a relation between the products.

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Nowhere in Tavor's method are user profiles, user preferences or requirements mentioned or used. Similarly, generation of dynamic fluent text output is not described or claimed in Paragraph [54] or anywhere else in Tavor. In contrast, Applicants' method is generating dynamic fluent text output with recommendations based on user preferences and requirements (profiles).

To further illustrate this point, paragraph [45] of the Tavor reference presents an example of Tavor's text output with the following phrases:

"... *a product has a blue color, a round shape, a big size...; ... a product is blue, big, round; ...a product is a shirt, a computer, an apple...; ... a product is of a Big Cheese kind, an Expensive look ...; ... a blue product, a big product, a fast product... ; a big screen product, a high resolution product, a top quality product...; ... a product is suitable for playing alone...; ... a product is suitable for a big room, a blue wallpaper, KX-456 cellular phone model...; ... a product is used for cooking...; ... a product has a center piece...; ... a product is not blue...; ...a product is made in USA...,"* etc.

It is clear from the above citation that Tavor's output is not producing a dynamically generated fluent text which is as described and claimed by the Applicants. Tavor is generating pseudo-natural language output which comprises short primitive phrases of the type *"Product A has Property B,"* or simple comparisons of the type *"Although both p1 and p2 are big, p1 is bigger than p2"*. The Applicants' method, however, generates dynamic fluent text output with recommendations based on user preferences and requirements, as illustrated, for example, by paragraphs [65-66] and [68] of the application (in which user profile text snippets are here marked with bold face):

"... produce the following paragraphs: [65] The top overall pick is the Epson PhotoPC 650. It has the best collection of convenience features, **which is important if you just want to take vacation snapshots, without having to be a rocket scientist.** It has lower ratings in Portability and Image Quality, **which are also high on the list for the basic snapshot taker,** but has high scores in Storage and Connectivity."

From this example it is clear that the text that the Applicants generate to convey recommendations is human-like, coherently flowing text with appropriate and convincing rhetorical structure. This type of fluent recommendation text is completely different from that in the Tavor reference, and is not present in, nor anticipated by the Tavor reference. The sole point of similarity with Tavor is that Applicants' text sometimes includes statements that compare an individual feature between products, but this implicit comparison is subordinate to the overall goal of the texts, which is to explain how the products' features do or do not match the user's specific requirements. For example, the text may mention that a camera has "lower ratings in Portability and Image Quality" than one or more other models, but this is only of importance because (1) the user expressed an interest in these particular features; and (2) the ratings were assigned relative to

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the user's specific requirements (which might well call for *less* portability, presumably in tradeoff for other features such as a lower price, for some users). Tavor, by contrast, would generate the same feature-by-feature comparison statements regardless of which features the user was most interested in, and regardless of how they valued the presence or absence of each feature. In other words, users and their requirements do not play any role in Tavor's method and do not influence the product comparisons that are produced by it.

As can be seen, none of the necessary components of Applicants' method – user preferences and requirements, i.e. profiles; user profile text snippets; personalized recommendations based on user requirements and preferences from user profiles; or dynamically generated fluent text that is used to convey product recommendations – are even hinted at in paragraphs cited by the Examiner (or anywhere else in Tavor).

The Examiner partially acknowledged the above when he stated "Tavor does not teach 'user profile text snippets produces personalized recommendation for the product featuring dynamically generated fluent text ... analysis and recommendation tailored to the user requirements and preferences.'" The Applicants agree with this statement by the Examiner.

The Hyman reference

The examiner further stated that:

"Hyman et al. teaches 'user profile text snippets produces personalized recommendation for the product featuring dynamically generated fluent text ... analysis and recommendation tailored to the user requirements and preferences' (see paragraphs [0058] and [0156] and [0162])."

The Applicants respectfully disagree.

The cited paragraphs from the Hyman reference describe a process whereby an employee selects components for his/her benefit plan by interacting with a computer program that provides recommendations and analyses based on the stated preferences and requirements of both the employee and the employer. However, there is no reference to, or suggestion of, the notion of "user profile text snippets" or "dynamically generated fluent text", either in the cited paragraphs or elsewhere in the Hyman reference.

Paragraph [0162] refers to Figures 8E and 8F, which illustrate user-interface screens displaying a list of products (i.e. components of a benefit plan) that have been suggested by the program to the employee. Based on this list, the employee can view detailed information about selected products – for example, the various deductible and co-pay amounts associated with an HMO medical plan. However, there is no information that could be construed as a *personalized recommendation featuring dynamically generated fluent text* – that is, a paragraph or paragraphs of text that explains in a rhetorically structured fashion *why* a given product is appropriate for the

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current employee, *based on his/her specific preferences*. An example of such a text would be the following:

"The Oxford Health Plan is a good choice for you, because you have several dependents and a relatively low salary – the low co-pays are advantageous if you have young children who get sick often."

This paragraph is the type of text that would be generated using the techniques taught by the Applicants' invention – it uses user profile text snippets (e.g. *"because you have several dependents..."*) that are indexed to features of the described product, to generate a coherent explanation of how the product relates to the user's requirements.

Instead, the description for a given product in the Hyman reference is a generic "canned" text in point form – for example:

- *HMO*
  Oxford Health Plan
  $5 co-pay in network
  No deductible
  100% in patient hospitalization
  $10 co-pay pharmacy
  Single $125.00Family $300.00

This text is displayed in the same way for all users of the program; it is neither personalized, nor dynamically generated, in that it makes no reference to the employee's particular preferences or requirements. It is also not fluent, since it is presented merely as a list of separate points, rather than as a coherent paragraph or paragraphs.

As can be seen, the necessary components of Applicants' method cited by the Examiner, including "user profile text snippets produces personalized recommendation for the product featuring dynamically generated fluent text ... analysis and recommendation tailored to the user requirements and preferences", are not present in the Hyman reference.

Combination of Tavor and Hyman references

Having shown how the Tavor and Hyman references individually differ from the Applicants' method, let us now discuss their combination. The Applicants will further demonstrate

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that the combination of references does not result in the claimed invention, that there is no suggestion or motivation to combine or modify the references cited by the examiner, and finally that there is no reasonable expectation of success of such combination and that in fact the combination is not possible.

The combination of references does not result in the claimed invention

A feature of the Applicants' invention is the development of product features and user profiles, with which both text snippets and scoring functions can be associated. More specifically, the Applicants' method teaches the following steps:

1. developing a set of features that apply to products in the class, and groupings of these features (paragraph [0024]);
2. developing and testing a scoring function for each feature, which is used to rank different products based on their values of that feature (paragraph [0025]);
3. developing and testing text "snippets" for each feature, which are phrases to be used by the Text Generator component of the Synthesizer when describing or referring to particular product features (paragraph [0026]);
4. developing and testing user profiles, which are collections of values of features that are considered to be suitable for different types of users of the product class (paragraph [0027]);
5. developing and testing text snippets for each user profile, which are phrases to be used by the Text Generator component of the Synthesizer when describing or referring to particular user profiles (paragraph [0028]) and dynamically generating fluent text output.

Among important components of the Applicants' method, missing from either the Tavor or Hyman references or combination thereof, is the notion of associating product features and user profiles, on the one hand, and scoring functions and text snippets, on the other. This association is what allows the Applicants' invention to explain to the user *why* a given product is recommended, in terms of particular features and/or user profiles. Other components of the Applicants' method, missing from either the Tavor or Hyman references, will be analyzed later.

To give an example, consider a recommendation for a digital camera, such as would be generated by the Applicants' invention (paragraph [0068]):

The **PhotoPC 650 has the most convenience features.** Like the **D-220L, it has auto focus and red eye reduction, and the highest zoom factor.** But it is also the only model with **rechargeable batteries. All three models have a self timer.**

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In order to generate this recommendation, the system must perform the following steps:

1. The Ranking Engine computes a score for each feature (auto focus, red eye reduction, zoom factor, rechargeable batteries, self timer).

2. These scores are passed to the Text Generator, which looks up an appropriate text snippet for each feature, depending on the score (e.g. for the zoom factor feature, given that the current product has the highest score on that attribute among the products selected for comparison, it would select the superlative snippet *"[has] the highest zoom factor"*).

3. The text generator combines the feature snippets and other generic phrasing into a fluent, rhetorically structured paragraph, which includes appropriate connecting phrases such as "like the ...", "also", and "but".

This can be summarized by saying that the system takes as *input* a list of feature scores, and produces as *output* a paragraph of text composed primarily of feature text snippets.

The Applicants' method also extends this process to *user profiles* – for example, in the following example (paragraph [0065]):

The top overall pick is the **Epson PhotoPC 650**. **It has the best collection of convenience features, which is important if you just want to take vacation snapshots, without having to be a rocket scientist.**

In this case a score is computed for the "snapshot taker" user profile, which is based on the scores for the individual features in the "convenience features" group. This score and user profile are associated with a user profile text snippet, *"[which] is important if you want to take vacation snapshots, ..."*.

Again, in this case, the system takes as *input* a user profile score, and produces as *output* a paragraph of text composed primarily of user profile text snippets.

Now, albeit Applicants believe that the references are not combinable, let us consider how a hypothetical combination of the Tavor and Hyman references could be used to duplicate this process. As mentioned above, we could imagine a system, based on an imaginary combination of references, that generated recommendations such as the following:

"The Oxford Health Plan is a good choice for you, because you have several dependents and a relatively low salary – the low co-pays are advantageous if you have young children who get sick often."

In order to generate this text using methods similar to the Applicants' invention, an imaginary system based on Tavor and Hyman combination would need to include the following essential elements:

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1. A list of features that can be used to distinguish different health plan components (e.g. deductible amount, pharmacy co-pay amount, percentage of coverage for hospitalization, etc.);

2. One or more user profiles that are defined in terms of specific requirements for values of these features (e.g. the "low salary / multiple dependents" user profile would require low deductibles and co-pays, high percentage of hospitalization coverage, etc.);

3. A method of assigning numerical scores to the various features and user profiles, as input to the Text Generator;

4. A set of text snippets indexed to the individual features and user profiles, to be used to compose the output of the Text Generator.

5. Ability to output dynamically generated fluent text that is used to convey product recommendations.

The Applicants will further demonstrate that it would not be possible to construct these elements by combining the Tavor and Hyman references. Specifically, although Tavor teaches *some* of the methods required for Items (1) and (4), neither Tavor nor Hyman, nor combination thereof addresses Items (2), (3) or (5). To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art (MPEP 2143.03). Therefore even if the combination of Tavor and Hyman references was possible, it does not render the Applicants' invention obvious because such combination does not result in the Applicants' invention.

As argued previously, the Tavor reference teaches certain methods for associating text snippets with product features; however, Tavor's techniques deal with *comparison* of products, without reference to the user's requirements, and he does not address user profiles. Tavor also does not teach a method for assigning scores to product features, for the purpose of assessing a fit with the user's requirements.

Turning to the Hyman reference, we see that what is missing is a method of assigning numerical scores to individual features, which would allow generation of product recommendations as in the Applicants' method. Even if one skilled in the art took the notion of feature text snippets from Tavor, Hyman has no features or feature scores with which to associate these snippets. The same is true for user profiles – Hyman teaches nothing about a user profile, defined in terms of a set of required values for individual features that could support the generation of fluent textual recommendations.

Further, Hyman appears to teach some aspects of a method of recommending products based on users' requirements:

"... webpages ... which prompts the employee to input further information as to her or his risk tolerance, preferences, etc. ... the webpages would display a series of questions ... about the

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employee's preferences, acceptance of risk, ... and various aspects of the employee's financial condition." (paragraph [0156])

"The rules point to those products which by custom or experience are known to be appropriate for a particular employee with a given set of characteristics." (paragraph [0157])

"... includes a window 332 where more detailed information about the selected product and the rational for selection is displayed." (paragraph [0159], referring to Fig. 8C)

However, the key point is that Hyman *provides no access to a list of feature scores with which text snippets could be associated*. The second quotation above shows that Hyman's product ranking procedure merely returns a "yes" or a "no" for each product for a given employee, rather than a list of scores for each product feature, which can be used to explain in detail which features did or did not match the employee's requirements or preferences. In other words, the only natural language explanation that could be generated based on the output of the ranking rules would essentially be *"This product is a good choice for you"*, or *"This product is not a good choice for you."* The rules described by Hyman, ranking products based on "custom or experience", are "black boxes" – no detailed rationale is provided as to how individual product features or user requirements contributed to the overall ranking (in spite of the third quotation above – the "rational [sic] for selection" displayed is simply a list of the product's feature values in point form; there is no indication of which features are positive or negative with respect to the user's requirements). And this sort of detailed rationale, in the form of a list of individual product feature scores, is among the most important components of the Applicants' invention. Without it, there is no basis for composing feature text snippets or user profile text snippets to dynamically generate fluent textual product recommendations. Finally, the combination of the references cited by the Examiner, lacks the ability to dynamically generate fluent textual product recommendations.

Therefore, as the Applicants have demonstrated, the Tavor and Hyman references either alone or in combination do not contain all of the components of the present invention. Accordingly, those skilled in the art would not be able to combine these references to develop the method of the present invention.

Therefore, it is respectfully suggested that the rejection of claims 1, 3, 5 through 11, 13, and 14 under 35 USC 103 (a) as being unpatentable over Tavor in view of Hyman et al. is overcome.

No desirability of the references' combination and no reasonable expectation of success

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally

available to one of ordinary skill in the art. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination and reasonable expectation of success. Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." (MPEP 2143.01)

The Tavor reference teaches a method "for performing ... a comparison between an unlimited number of products", the products which are "of the same kind, with nearly the same features" (Tavor's Abstract) and presenting a user with a comparison. The products for the comparison are selected based on similarity of product features. The Hyman reference teaches a user interface and method of determining optimal configurations for inherently different employee benefit plans, taking into account the preferences and requirements of both employers and employees. This includes a web page "which prompts the employee to input further information as to her or his risk tolerance, preferences etc." (Hyman reference, paragraph [0156])", as well as a set of rules which "point to those products which by custom or experience are known to be appropriate for a particular employee with a given set of characteristics" (paragraph [0157]).

The Tavor reference is a method of comparing products, not recommending them. The method compares features of products of the same kind without any connection to users' preferences or requirements. Hyman, on the other hand, teaches a method of producing recommendations for products, based on users' preferences and requirements, but without any generated descriptions explaining how a product's features relate to the user's requirements. There is no teaching, suggestion, or motivation to combine the Hyman reference's user interface and method of determining optimal configurations for various different employee benefit plans taking into account the preferences and requirements of both employers and employees, with the Tavor reference's method for performing comparison between an unlimited number of products of the same kind without any connection to users' preferences or requirements. Furthermore, based on the above analysis, there is no reasonable expectation of success of such combination due to inherent differences in Hyman's and Tavor's methods.

Therefore, it is respectfully suggested that the rejection of claims 1, 3, 5 through 11, 13, and 14 under 35 USC 103 (a) as being unpatentable over Tavor in view of Hyman et al. is overcome also on the basis of absence of motivation to combine references and absence of reasonable expectation of success of such combination .

Claim 5

The examiner also stated that:

"As per claim 5, this claim is rejected on grounds corresponding to the arguments given above for rejected claim 1 and is similarly rejected including the following:

— Tavor teaches 'testing the user profile text snippets' (see page 5, paragraphs [0057]-[0059])."

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In addition to the arguments presented above, the Applicants note that there is nothing in the paragraphs cited by the Examiner which mentions user profile text snippets at all, nor is there anything about testing them. Claim 5 should be allowable for the same reasons as Claim 1, on which it depends, plus the additional limitation it contains.

Claim 6

The examiner also stated that:

"As per claim 6, this claim is rejected on grounds corresponding to the arguments given above for rejected claim 1 and is similarly rejected including the following:
– Tavor teaches 'providing access to the product recommendation ...' (see page 5, paragraphs [0058]-[0059])."

In addition to the arguments presented above, the Applicants argue that in the paragraphs cited by the Examiner and in the Tavor's whole reference, Tavor teaches comparisons between products. To the contrary, the Applicants' claim 6 does not involve providing access to product comparisons, only to personalized recommendations as claimed in Claim 1 on which Claim 6 depends. Claim 6 should also be allowable for the same reasons as Claim 1 on which it depends, plus the additional limitation it contains.

Claim 7

The examiner also stated that:

"As per claim 7, this claim is rejected on grounds corresponding to the arguments given above for rejected claim 1 and is similarly rejected including the following:
– Tavor teaches 'a computer network ...' (see abstract)."

While Tavor does teach a computer network, the Applicants argue, in addition to the arguments presented above, that a computer network is only the first part of the Applicants' Claim 7. The entire claim should be considered in comparison to Tavor, and Tavor *does not* teach "providing customers with product recommendations over a computer network, *by combining the generic phrases with feature text snippets and user profile text snippets to produce personalized recommendations for the products featuring dynamically generated fluent text that conveys product analyses and recommendations tailored to the user requirements and preferences.*" Claim 7 should be allowable for the same reasons as Claim 1 on which it depends, plus the additional limitation it contains.

Claims 8-11

The examiner also stated that:

"As per claims 8-11, these claims are rejected on grounds corresponding to the arguments given above for rejected claims 1-7 and are similarly rejected including the following:

— Tavor teaches 'display and explanation of a comparison between several products' (see page 4, paragraphs [0050]-[0051])."

The Applicants respectfully disagree. In addition to the above arguments by the Applicants, and for the reasons cited above by the Applicants, Claims 8, 9, 10, and 11 are allowable over Tavor in view of Hyman. In addition, the Applicants' method and claims does not claim comparison between several products as it is stated by the Examiner. To the contrary, Claims 8, 9, 10, and 11 claim providing personalized dynamically generated fluent text delivering product recommendations.

Conclusion

Finally, the independent Claims 1 and 8 in the present application clearly provide for the method of the invention to prepare a personalized recommendation of a product featuring dynamically generated fluent text that is used to convey a product analysis and recommendation tailored to the user requirements and preferences by the combination of generic phrases, feature text snippets, and user profile text snippets. Neither the Tavor reference, nor the Hyman et al. reference, nor the combination of these two references, shows or suggests all of the features of the Applicants' method. Additionally, there is no suggestion or motivation to combine or modify these references, and there is no reasonable expectation of success of such imaginary combination.

Therefore, it is respectfully suggested that the rejection of independent Claims 1 and 8 under 35 USC 103 (a) as being unpatentable over Tavor in view of Hyman et al. is overcome. Dependent Claims 3, 5-7, 9-11, and 13-14, being dependent upon and further limiting independent Claims 1 and 8, should also be allowable for the same reasons, as well as for additional limitations they contain. Reconsideration and withdrawal of the rejection are respectfully requested.

The Applicants believe that the claims are patentable over the prior art, and that the case is in condition for allowance of all claims therein. Such action is thus respectfully requested.

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